

CLMPTO

09/857288

10/01/01

E.P.

1. A method of controlling the transmission of delay sensitive and non-delay sensitive traffic from a plurality of network nodes (20) to a central node (10) over a shared medium (100), wherein time slots for transmission over said shared medium (100) are allocated by said central node (10) to the network nodes (20), characterised by providing a scheduler (30, 40) defining a predetermined scheduling interval for at least one delay sensitive traffic service, said scheduling interval corresponding essentially to the time in terms of time slots for assembling a data packet of the delay sensitive traffic service, prior to allocating a time slot, consulting said scheduler (30, 40) to determine if a scheduling interval has elapsed, and allocating said time slot to a network node (20) carrying a delay sensitive traffic service if said scheduler indicates that the predetermined interval for the delay sensitive traffic service has elapsed.
2. A method as claimed in claim 1, characterised by for each delay sensitive traffic service, adapting the predetermined scheduling interval to the frame length of the traffic service.

Art Unit: 1

--3. (Amended) A method as claimed in claim 1, characterized by allocating said time slot to a further network node (20) carrying a non-delay sensitive service on the basis of stored information concerning non-delay sensitive traffic awaiting transmission if the scheduler (30, 40) indicates that no scheduling interval has elapsed.--

--4. (Amended) A method as claimed in claim 1, characterised by determining from said scheduler (30, 40) if the scheduling interval for more than one traffic service has

elapsed; and allocating consecutive time slots to the scheduled traffic services with alternating priority.--

Art Unit: 1

5. A method of controlling the transmission of delay sensitive and non-delay sensitive traffic from a plurality of network nodes (20) to a central node (10) over a shared medium (100), wherein traffic is transmitted from said network nodes (20) to said central node (10) in time slots in response to permits issued to said network nodes by said central node characterised by
  - providing a scheduler defining a predetermined scheduling interval for at least one delay sensitive traffic service,
  - prior to issuing a permit, consulting said scheduler to determine if a predetermined scheduling interval has elapsed,
  - if at least one interval has elapsed, issuing a permit enabling transmission during a future time slot to a network node (20) carrying a delay sensitive traffic service, and
  - if no interval has elapsed, issuing a permit enabling transmission during said future time slot to a further network node (20) carrying a non-delay sensitive service on the basis of stored information relating to non-delay sensitive traffic awaiting transmission.
6. A packet switched communication network including a central node (10) and a plurality of network nodes (20) connected to said central node (10) by a shared medium (100), wherein data is transmitted from said network nodes (20) to said central node (10) over said shared medium in time slots allocated by said central node, characterised by scheduling means (30, 40) for storing scheduling intervals relating to delay sensitive traffic services carried by at least one network node,

Art Unit: 1

wherein said stored scheduling intervals correspond essentially to the time in terms of time slots for assembling a data packet of the traffic service, and

means in said central node (10) for consulting said scheduling means to determine whether a scheduling interval has elapsed and for allocating a time slot to a network node (20) carrying a delay sensitive traffic service if a scheduling interval relating to said traffic service has elapsed.

7. A network as claimed in claim 6, characterised in that said scheduling means (30, 40) includes a plurality of storage cells (31,42) each cell corresponding to a transmission time slot on said shared medium and being programmable with a marker corresponding to a delay sensitive traffic service.
8. A network as claimed in claim 7, characterised in that the cells (31, 41) in said scheduling means (30, 40) are sequentially accessible.

--9. (Amended) A network as claimed in claim 7, characterised in that the cells of the scheduling means are accessed cyclically.--

--10. (Amended) A network as claimed in claim 7, characterised in that the number of cells included in said scheduling means (30) is at least equal to the multiple of the scheduling intervals in terms of time slots of the scheduled traffic.--

Art Unit: 1

--11. (Amended) A network as claimed in claim 7, characterised in that said scheduling means (40) comprises several cyclical schedulers (41), wherein each cyclical scheduler (41) is programmed with scheduling markers relating to traffic services having the same scheduling interval in terms of time slots, the cells of each scheduler corresponding to the same time slot being accessible in turn.--

12. A network as claimed in claim 11, characterised in that each scheduler (41) has a length in cells (42) that is equal to the scheduling interval in terms of time slots of the scheduled traffic services.

--13. (Amended) a network as claimed in claim 6, characterised in that said central node (10) comprises queue recording means (11) for storing the packet queue size of non-delay sensitive traffic awaiting transmission at said network nodes (20).--

Art Unit: 1

14. A packet switched communication network including a central node (10) and a plurality of network nodes (20) connected to said central node (10) by a shared medium (100), wherein payload information is transmitted from said network nodes (20) to said central node (10) over said shared medium in time slots allocated by said central node, characterised by scheduling means (30, 40) including plurality of storage cells (31,42) each cell corresponding to a transmission time slot on said shared medium and being programmed with markers corresponding to at least one delay sensitive traffic services carried by at least one network node, the number of cells separating a marker for the same traffic service corresponding essentially to the time in terms of time slots for assembling a data packet of the traffic service, and means in said central node (10) for sequentially consulting the cells of said scheduling means to determine if a marker designating a delay sensitive traffic service is present and for allocating a time slot to a

Art Unit: 1

network node (20) carrying a delay sensitive traffic service if a marker corresponding to said traffic service is present in a consulted cell.

15. A packet switched communication network including a central node (10) and a plurality of network nodes (20) connected to said central node (10) by a shared medium (100), wherein payload information is transmitted from said network nodes (20) to said central node (10) over said shared medium in time slots allocated by said central node, characterised by scheduling means (30, 40) including a plurality of cyclical storage means (41), wherein each storage means (41) includes a plurality of storage cells (31,42) each corresponding to a transmission time slot on said shared medium, each storage means further being programmed with scheduling markers relating to delay sensitive traffic services that are carried by at least one network node (20) and have the same frame length in terms of time slots, and means in said central node (10) for consulting the cells (31, 42) of each scheduler corresponding to the same time slot in turn to determine if a marker designating a delay sensitive traffic service is present and for allocating a time slot to a network node (20) carrying a delay sensitive traffic service if a marker corresponding to said traffic service is present in a consulted cell.

16. A node in a packet switched communication network for controlling the transmission of data from a plurality of network nodes (20) over a shared medium (100) by allocating transmission time slots to said network nodes (20), said node being characterised by means (30, 40) for storing scheduling intervals relating to delay sensitive traffic services carried by at least one network node (20), the scheduling interval for each traffic service corresponding essentially to

Art Unit: 1

the time in terms of time slots for assembling a data packet of the traffic service,

means (11) for recording the number of packets of non-delay sensitive traffic awaiting transmission at said network nodes (20) and a controller for consulting said scheduling means to determine whether a scheduling interval has elapsed and for allocating a time slot to a network node (20) carrying a delay sensitive traffic service if a scheduling interval relating to said traffic service has elapsed or for allocating a time slot to a network node (20) carrying non-delay sensitive traffic selected on the basis of the number of packets awaiting transmission if no scheduling interval has elapsed.

17. A node in a packet switched communication network for controlling the transmission of data from a plurality of network nodes (20) over a shared medium (100) by allocating transmission time slots to said network nodes (20), said node being characterised by scheduling means (30, 40) including plurality of storage cells (31,42) each cell corresponding to a transmission time slot on said shared medium and being programmable with a marker corresponding to a delay sensitive traffic service carried by at least one network node, the number of cells separating a marker for the same traffic service corresponding essentially to the time in terms of time slots for assembling a data packet of the traffic service, and means for sequentially consulting the cells of said scheduling means to determine if a marker designating a delay sensitive traffic service is present and for allocating a time slot to a network node (20) carrying a delay sensitive traffic service if a marker corresponding to said traffic service is present in a consulted cell.

Art Unit: 1

18. A network as claimed in claim 17, characterised in that the number of cells (31) included in said scheduling means (30) is at least equal to the multiple of the frame lengths in terms of time slots of the scheduled traffic.
19. A node in a packet switched communication network for controlling the transmission of data from a plurality of network nodes (20) over a shared medium (100) by allocating transmission time slots to said network nodes (20), said node being characterised by scheduling means (30, 40) including a plurality of cyclical storage means (41), wherein each storage means (41) includes a plurality of storage cells (31,42) each corresponding to a transmission time slot on said shared medium, each storage means further being programmed with scheduling markers relating to delay sensitive traffic services that are carried by at least one network node (20) and have the same frame length in terms of time slots, and means in said central node (10) for consulting the cells (42) of each scheduler corresponding to the same time slot in turn to determine if a marker designating a delay sensitive traffic service is present and for allocating a time slot to a network node (20) carrying a delay sensitive traffic service if a marker corresponding to said traffic service is present in a consulted cell.
20. A node as claimed in claim 19, characterised in that the number of cells (41) separating a marker for the same traffic service corresponds essentially to the time in terms of time slots for assembling a data packet of the traffic service at the network node (20).